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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/615,298 | 07/09/2003 | Osamu Furukawa | 108066-00087 | 7118 |

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| EXAMINER | |
|---|---|
| CARPIO, IVAN HERNAN | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 2841 | . |

DATE MAILED: 10/02/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/615,298 | FURUKAWA ET AL. | |
| | Examiner | Art Unit | |
| | Ivan H. Carpio | 2841 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *17 July 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1,3,5,7 and 8* is/are pending in the application.

4a) Of the above claim(s) *8* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3,5 and 7* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *09 July 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

### *Response to Arguments*

Applicant's arguments filed 06/16/06 have been fully considered but they are not persuasive. The applicant's first argument in regards to claims 1 and 3 is that Huang fails to teach or suggest a bonding wire having a predetermined characteristic, yielding a specific inductance as an electric circuit element in connection with the one electronic component device, examiner respectfully disagrees. Since the specific material and physical dimensions of the bonding wire, taught by Huang (Fig. 1, element 23) are predetermined before installation and since inductance is related to material and physical dimension, Huang teaches a bonding wire having a predetermined characteristic, yielding a specific inductance as an electric circuit element in connection with the one electronic component device. The applicant's second argument in regards to claims 5 and 7 is that neither Fujimoto or Huang teach or suggests a bonding wire having a predetermined characteristic, yielding a specific inductance as an electric circuit element to improve a frequency band characteristic of the surface acoustic wave filter, examiner respectfully disagrees. Since the specific material and physical dimensions of the bonding wire, taught by Huang (Fig. 1, element 23) are predetermined before installation and since inductance is related to material and physical dimension and furthermore since the predetermined inductance helps form a resonant system which attenuates specific band frequencies apart from the pass band, Huang teaches a bonding wire having a predetermined characteristic, yielding a specific

inductance as an electric circuit element to improve a frequency band characteristic of the surface acoustic wave filter.

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claim 1 is rejected under 35 U.S.C. 102(e) as being anticipated by Huang (US Patent 6777819).

With respect to claim 1 Huang teaches a wiring substrate (Fig. 1, element 20) having wiring patterns (Fig. 1, element 202) formed on one side and external connection terminals (Fig.1, element 203) formed on the other side, the wiring patterns and the external connection terminals being connected with each other via holes (paragraph [0016], lines 6-8) or through holes, a plurality of electronic component devices (Fig. 1, elements 21 and 22) mounted on the one side of the wiring substrate, at least one of the plurality of electronic component devices being fastened face up (Fig. 1, element 21) to the one side of the wiring substrate and having a connection terminal, a bonding wire (Fig.1, element 23) connecting the connection terminal of the one of the plurality of the electronic component devices with another of the plurality of electronic component

device or with one of the wiring patterns formed on the one side of the wiring substrate, the bonding wire having a predetermined characteristic, yielding a specific inductance as an electric circuit element in connection with electronic component device, to which one terminal of the bonding wire is connected, and an exterior resin layer (Fig. 1, element 26) formed on the wiring substrate which covers the plurality of electronic component devices and the bonding wire.

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Huang in view of Fujimoto (US 2001/0006456 A1).

With respect to claim 3 and with all the limitations of claim 1, Huang teaches that an electronic component device fastened face up to the one side of the wiring substrate but does not specify that it is attached by a conductive paste. Fujimoto teaches a component device attached face up to a substrate by a conductive paste (paragraph [0039], lines 1-4). It would have been obvious to attach the electronic component to the substrate taught by Huang using the conductive paste taught by Fujimoto for the purpose of conducting heat away from the component.

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamada (US Patent 6784765) in view of Huang.

With respect to claim 5, Yamada teaches a surface mounted electronic component module (Fig. 4) comprising, a wiring substrate (Fig. 4, elements 19,15 and 16) having wiring patterns (Fig. 4, elements 2) formed on one side and external connection terminals (Fig.4, elements 7) formed on the other side, the wiring patterns and connection terminals being connected to each other with via holes (Fig. 4, elements 3), a semiconductor chip (Fig. 4, element 4) mounted on the one side of the wiring substrate, having a connection terminal, and forming a switch (column 12, lines 15-20) for changing over the opening/closing of radio frequency transmission/reception signals and a decoder circuit (fig. 4, elements 2) for controlling the switch changeover operations; a surface acoustic wave filter (Fig. 4, element 5) mounted on the one side of the wiring substrate, and electrically connected to the switch, an exterior resin layer (Fig. 4, element 6) formed on the wiring substrate which covers the semiconductor chip and the acoustic wave filter. Yamada does not teach that the semiconductor chip is fastened face up, and a bonding wire having one terminal connected to the surface acoustic wave filter and the other terminal connected to the connection terminal of the semiconductor chip the bonding wire having a predetermined characteristic, yielding a specific inductance as an electric circuit element to improve a frequency band characteristic of the surface acoustic wave filter. Huang teaches a semiconductor device (Fig. 1, element 21) that is face up and a bonding wire with one terminal

connected to the connection terminal of the semiconductor chip and the other end connected to the connection terminal of another component (Fig. 1, element 22), the bonding wire having a predetermined inductance as an electric circuit element to improve a frequency band characteristic of the surface acoustic wave filter. It would have been obvious to one of ordinary skill in the art at the time of the invention to use the mounting structure taught by Huang on the RF device taught by Yamada, thereby connecting the surface acoustic wave filter to the semiconductor device by bonding wire, because doing so would make the positioning of the chips on the wiring substrate more flexible due to the wire length.

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamada and Huang in view of Fujimoto (US Patent 6777819).

With respect to claim 7 and with all the limitations if claim 5, Yamada and Huang teach all of the limitations except that the semiconductor chip mounted face up on the one side of the wiring substrate, is fastened to the wiring substrate by a bond made of conductive paste. Fujimoto teaches a component device attached face up to a substrate by a conductive paste (paragraph [0039], lines 1-4). It would have been obvious to attach the electronic component to the substrate taught by Yamada using the conductive paste taught by Fujimoto for the purpose of conducting heat away from the component.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US Patents 6404303 and 6633005 both relate to inductance and frequency attenuation. US Patent 6424541 discloses a similar physical structure.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ivan H. Carpio whose telephone number is 571-272-8396. The examiner can normally be reached on M-R 6:00am - 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dean Reichard can be reached on 571-272-1984. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

IC

Dean A. Reichard 9/28/06

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